


1.1 Finding and Describing Patterns

9/6/12

Examples:



2, 4, 8, 16, ... 32

1, 4, 9, 16, ... 25

1, 5, 9, 13, 17, ... 21

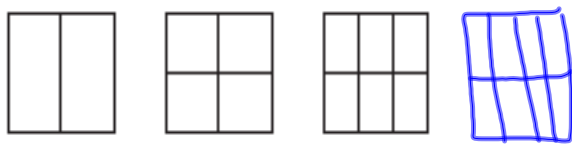
A, B, B, C, C, C, ... DDDD

3, 12, 48, ... 4

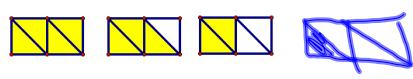
J, F, M, A, ...

Sep 7-9:20 AM

What shape is next?





What shape is next?



Sep 3-7:47 AM

Describe a pattern.

1. 


2. 

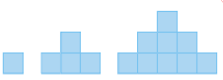
3. 4, 8, 12, 16, 20, 24, ... 24

4. 35, 30, 25, 20, 15, 10, ... -5

Sep 11-10:21 AM

Sketch the next two figures you expect in the pattern.

5. 

6. 

Write the next two numbers you expect in the pattern.

7. -2, -5, -8, -11, ... -14
-3

8. 4, 10, 16, 22, ... 28

Sep 11-10:21 AM

1

Sketch the next figure you expect in the pattern.

1.

3.

4.

Describe a pattern in the numbers. Write the next two numbers you expect in the pattern.

5. 3, 11, 19, 27, ... 6. 2, 6, 18, 54, ...

Sep 11-10:23 AM

1.2 Inductive Reasoning

Aug 22-9:46 AM

Conjecture--unproven statement based on pattern or observation

Counterexample-- an example that shows a conjecture is false

Sep 7-8:26 AM

Complete the conjecture with the word *odd* or *even*.1. The sum of any three odd numbers is odd.

Examples: $1 + 5 + 7 = 13$
 $3 + 5 + 9 = 17$
 $-5 + 7 + 11 = 13$

2. The difference between an integer and its opposite is even.

Examples: $5 - -5 = 10$
 $-8 - 8 = -16$
 $10 - -10 = 20$
 $-3 - 3 = -6$

Aug 22-9:50 AM

Complete with odd or even.

Complete the conjecture based on the pattern in the examples.

1. *Conjecture:* The product of any two odd numbers is ? *odd*

EXAMPLES

$$\begin{array}{lll} 1 \times 1 = 1 & 3 \times 5 = 15 & 3 \times 11 = 33 \\ 7 \times 9 = 63 & 11 \times 11 = 121 & 1 \times 15 = 15 \end{array}$$

Show the conjecture is false by providing a counterexample.

Conjecture: If the sum of two numbers is positive, then the two numbers must be positive.

$$\begin{array}{l} 20 + -3 = 17 \\ -2 + 3 = 1 \end{array}$$

Sep 11-10:30 AM

Sep 11-10:32 AM

Show the conjecture is false by finding a counterexample.

3. If the product of two numbers is even, the numbers must be even.
4. If a shape has two sides the same length, it must be a rectangle.

#3 $5 \times 4 = 20$



Complete the conjecture with *odd* or *even*.

3. *Conjecture:* The difference of any two odd numbers is ? *even*

4. *Conjecture:* The sum of an odd number and an even number is ? *odd*

$$\begin{array}{ll} 5 - 3 = 2 & 7 - 1 = 6 \\ 1 + 2 = 3 \end{array}$$

Sep 11-10:34 AM

Aug 22-9:50 AM

Show the conjecture is false by finding a counterexample.

5. Any number divisible by 2 is divisible by 4.

6. The difference of two numbers is less than the greater number.

$14 \div 2 = 7$
 $14 \div 4 = 3.5$

Worksheet

Sep 11-10:38 AM

Aug 22-9:51 AM